

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS
(WORCESTER DIVISION)

G, a 12-year-old minor
suing by a fictitious name for privacy reasons,
et al,

Plaintiffs,

-v-

THE FAY SCHOOL,
by and through its Board of
Trustees, and ROBERT GUSTAVSON,

Defendants.

Civil No. 4:15-cv-40116-TSH

**PLAINTIFFS' MEMORANDUM OF LAW IN OPPOSITION TO DEFENDANTS'
MOTION *IN LIMINE* TO EXCLUDE PLAINTIFFS' EXPERT WITNESSES**

Plaintiffs submit this Memorandum of Law in opposition to Defendants' motion *in limine* (Doc. 58) and the supporting Memorandum of Law (Doc. 59) (hereinafter the "Fay Memo").

I. THE EXPERTS' TESTIMONY AND ITS RELATION TO THE FIVE CLAIMS

(A) The Disability Claim (Count I)

G and his parents have brought this case alleging, among other claims, that G suffers from Electromagnetic Hypersensitivity Syndrome ("EHS"), which makes him unable to tolerate the Wi-Fi emission of radio waves at the levels constantly present in the Fay School classrooms. When so exposed, G suffers debilitating symptoms, including headaches, dizziness, nausea, tinnitus, and chest pressure, and he suffers these only at Fay and only because of its Wi-Fi. Plaintiffs claim that EHS is a disability covered by the Americans with Disabilities Act, (Title 42 U.S.C. §12182(a)) (the "ADA"), and that, because Fay has refused to make any meaningful

accommodation to end G's symptoms which debilitate him while at Fay, accommodations that Plaintiffs have offered to fund, Fay has violated the ADA.

In Count I, Plaintiffs seek an injunction ordering Fay to make these reasonable accommodations for G. Fay is a place of public accommodation to which the ADA applies. *DMP v. Fay Sch. ex rel. Bd. of Trustees*, 933 F. Supp. 2d 214, 221 (D. Mass. 2013). To obtain relief under the ADA, Plaintiffs must show that G: (1) is disabled within the meaning of the ADA; (2) he was otherwise qualified for participation in the Fay's program; (3) he made a request for a reasonable accommodation from Fay; and (4) Fay denied the request. *Id.*

(B) Overview of the Expert Testimony as It Relates to the Disability Claim (Count I)

Plaintiffs seek to offer testimony from their three medical experts that G suffers from EHS, that it renders him disabled under the ADA, and that the Wi-Fi emitted all day long in Fay classrooms triggers G's EHS causing his symptoms. These opinions will be discussed further below and are summarized in the Plaintiffs' experts' reports: Dr. David Carpenter (at Doc. 59-3, Def. Ex. 3); Dr. Jeanne Hubbuch (at Doc. 59-19, Def. Ex. 19) and Dr. Martha Herbert (at Doc. 59-20, Def. Ex. 20).¹

(C) Plaintiffs' Three Medical Experts Can Also Give *Non-Expert* Testimony Relevant to Plaintiffs' Other Claims (Counts II - V)

Plaintiffs disagree with Defendants' assertion that "the central issues in this case are the same for all plaintiffs' claims." (Fay Memo, p. 2, n.1) Beyond the disability-based injunction sought under the ADA (Count I), Plaintiffs have alleged an ADA-based retaliation claim (Count II), and state law claims for breach of contract (Count III), misrepresentation (Count IV) and negligence (Count V). These claims raise different issues as to which the three medical

¹ Another expert (discussed further below) is a contractor who can testify that certain accommodations that Plaintiffs have requested Fay to make (at Plaintiffs' expense) are reasonable, and easily implemented. This would drastically reduce G's exposure to Wi-Fi.

witnesses, seeking to give expert opinion testimony on the Count I disability claim, can also give relevant non-expert testimony.

Commencing with the retaliation claim (Count II), Plaintiffs will show that when they approached Fay about their concerns about G's disability, Fay retaliated against them in various ways in violation of the ADA anti-retaliation provision. And while Plaintiffs contend that G is disabled and that their experts and other evidence will more than meet their burden on that matter, "[P]laintiff need not succeed on a disability discrimination claim in order to assert a claim for retaliation." *D.B. ex rel. Elizabeth B. v. Esposito*, 675 F.3d 26, 40-41 (1st Cir. 2012). Instead, "protected conduct includes advocating for a student's right to be free from disability-based discrimination," even if it turns out the student does not qualify as disabled. *Lebron v. Commonwealth of Puerto Rico*, 770 F.3d 25, 31 n. 9 (1st Cir. 2014), *citing Esposito*, 675 F.3d at 41. Both requesting an accommodation and complaining of discrimination on the basis of a disability are protected activities for the purposes of [ADA] § 12203, *see, e.g., Kelley v. Corr. Med. Servs., Inc.*, 707 F.3d 108, 115 (1st Cir. 2013), as long as done in "good faith." *See, e.g., Amir v. St. Louis Univ.*, 184 F.3d 1017, 1025 (8th Cir. 1999) ("Filing such a grievance is a protected activity under the ADA as long as [plaintiff] had a reasonable good faith belief in the allegations contained in the grievance.")

Dr. Carpenter, Dr. Hubbuch, and Dr. Herbert (the three expert witnesses being offered as Plaintiffs' experts on EHS) can give testimony that shows good faith on the part of Plaintiffs in making their disability and discrimination claims to Fay. All three witnesses wrote letters early on which were sent to Fay (and copied to G's parents) expressing concern about G and Fay's Wi-Fi, and two specifically stated that G had EHS triggered by Fay's Wi-Fi and that Fay should

help him with this problem. (*See*, Exhibits 1, 2, 3)² These letters strengthened G's parents' belief that G had a disability as did the separate and detailed conversations two of these three doctors (Doctors Hubbuch and Herbert) had with G's parents. This evidence will be offered to show Plaintiffs' good faith belief about those claims of G's parents required as part of their retaliation claim.

These three letters are also relevant to Plaintiffs' breach of contract and misrepresentation claims. Plaintiffs make these claims because, as they will show at trial, a major promise elaborately stated in Fay's Parent and Student Handbook was dishonored by Fay. Fay's Handbook makes glowing promises about how it will treat those students with differences. It starts by proclaiming that Fay keeps as a "core value . . . the wellness of mind, body and spirit of each student." This it failed to do for G and his parents. More specifically, Fay's Handbook promises³ that it will provide each student with "a safe and supportive environment," that "recognizes, respects, and celebrates the full range of human diversity;" that it will help when students "are in physical need," that it will "recognize and celebrate . . . disability," that it "affirms the necessity of respect for individual differences," and that it will "maintain an environment in which all community members feel supported." The Fay Handbook also assures all students and their parents that Fay will educate students whether any such student has "any disability that can be reasonably accommodated by the School." Fay also assures that all students

² *See*, Letter of Dr. Carpenter, 7/28/2014, attached as Ex. 1; Letter of Dr. Hubbuch, 8/7/2014, attached as Ex. 2; and Letter of Dr. Herbert, 9/12/2015, attached as Ex. 3.

³ *See, Fay Sch. ex rel. Bd. of Trustees*, 933 F. Supp. 2d at 223 ("Massachusetts law has long recognized that in the context of private education, there is a contractual relationship between the school and student, the terms of which may include reciprocal rights and obligations set forth in the student handbook.")

will be afforded to all students: all rights, privileges, programs, and activities generally accorded or made available to students at Fay School. The School does not discriminate . . .”

(Ex. 4, Fay Parent/Student Handbook, at pp. 4-7, 46)

Despite these glowing assurances on which any reasonable parent would rely, as G’s parents did when they initially raised concerns about G’s symptoms and the link to Fay’s Wi-Fi, Fay was anything but “celebratory,” “respectful of individual differences,” or “supportive.” When this matter was first raised by what any reasonable person would see as a thoughtful letter by G’s parents to the Board of Trustees, the Head of School (defendant Gustavson) expressed no concern for the health of G or his symptoms, but rather was furious that the Board of Trustees had been contacted instead of him. He therefore instructed his staff that G’s mother and father “should not be rewarded for going around me.” (Ex. 5, Robert Gustavson Email, 4/28/2014) He also instructed that the G’s parents’ concerns “should not be added to the agenda” of the upcoming Board meeting. (*Id.*)

Following defendant Gustavson’s lead, Fay’s Director of Finance & Operations wrote an email to the Fay staff instructing that “we should avoid meeting with her and cut this off at the pass.” (*Id.*, Alan Clarence Email, 4/29/2014) Fay’s technology director wrote that a meeting with another parent expressing concerns about Wi-Fi after Plaintiffs had done so would “open a can of worms.” (Ex. 6, Peter Fearey Email, 10/23/2014). The Head of Lower School circulated a derisive email about G’s parents’ concerns, entitled “Aluminum Foil and Rabbit Ears,” and instructed her staff not to respond to any concerns expressed by G’s parents to which a teacher responded “Blahahahahahahahaha!” (Ex. 7, Lainie Schuster Email, 11/3/2014) The Assistant Head of School chimed in, emailing that he was involved in Fay’s effort to keep “at bay” the Plaintiffs and other parents who expressed concerns about the effect of Wi-Fi on their children.

(Ex. 8, David Liebmann Email, 11/10/2014) The technology director, after being contacted by plaintiff Mother with questions, inquired of his superior: "perhaps you should email her and to tell her we will talk to her in six months?" to which the Fay Director of Finance & Operations responded: "Perhaps it is time to ignore her (G's Mother's) requests." (Ex. 9, Alan Clarence and Peter Fearey Emails, 6/5-6/6/2014)

Consistent with this hostile attitude as shown above and by other emails, Fay refused to take any corrective action until after it was sued in this Court, and then took only inadequate measures. Fay thus did not honor its promises even after three doctors had warned Fay by the letters sent well before litigation. This hostile attitude in response is relevant to show that Fay did not make a good faith effort and did not mean what their Handbook represented.⁴

Receipt of these three letters (Exs. 1, 2, and 3) also put Fay on notice of the risk of harm to G by being subjected to Fay's Wi-Fi, and are thus relevant to the negligence claim (Count V).

II. PLAINTIFFS' EXPERT OPINIONS ABOUT G's SYMPTOMS

(A) The Three Medical Experts Rely in Part on G's Symptoms Suffered at Fay

Each of the three experts have extensive knowledge and training allowing them to give the opinions on EMFs sought in this case. Besides all their expertise and the scientific basis and methods they used, discussed further below, these experts have been made aware of the following facts. G's symptoms are headaches, accompanied periodically by nosebleeds, chest constriction and ear-ringing. They were first noticed in the spring of G's fifth grade year

⁴ While it is for another brief to detail the reasons why, Plaintiffs contend that the contract and misrepresentation claims are broader than the federal disability claim and that the promises made (quoted above from the Handbook) require action beyond narrow compliance with the federal law embodied in the ADA. Fay's contract promises and representations have certainly not been met by their conduct towards G and his family.

(2013/2014), worsened during the sixth grade year (2014/2015), and worsened still more in the fall of G's seventh grade year (2015). These facts are well-documented.

With heavy emphasis starting in the fifth grade when G's headaches were first noticed, Fay uses Wi-Fi to access the internet as a teaching tool. Wi-Fi is continuously used all day long. While each Fay classroom is set up for accessing the internet by Ethernet cable that would avoid using Wi-Fi in its classrooms altogether, Fay insists on using Wi-Fi which instead of connecting to the student computers by cable hook-up, beams electromagnetic radio waves (referred to as "EMFs") into each classroom from 42 separate access points throughout Fay which transmit the EMFs. In each classroom, these EMFs communicate with the 15 or so individual computer "laptop" or "tablet" devices being used by each student in each class. Thus, the EMFs come not only from the 42 Fay access points beaming these waves into the classrooms, but just as strongly if not more so from student computers which each beam EMFs to these 42 access points.

Since G could no longer tolerate the symptoms he suffered at Fay, which were becoming worse, he has, since December 2015, attended the Waldorf School in Lexington, Massachusetts. The Waldorf School does not use Wi-Fi in its classrooms. Unlike the 42 access points at Fay which communicate EMFs to 15 computers in each Fay classroom, the Waldorf School has only two access points, used only in the administrative offices. (Ex 10, Deposition of Jason Ek, pp. 31, 76). Since at Waldorf, G has had no headaches or other symptoms of the kind he suffered at Fay.⁵

⁵ Unfortunately, it is not as easy as simply remaining at the Waldorf School where there is no Wi-Fi and there are no headaches. G's parents have paid over \$160,000.00 to have G enrolled for the last nine years at Fay, which promises that its teaching methods are integrated from kindergarten through ninth grade, with each year planned to make the student ready for the next. Fay promises that its cumulative teaching method results in a highly-valuable learning experience that will well equip each student completing the program for college preparatory school. G should be allowed to finish despite his disability, and thus obtain the still-to-be-

As noted by the doctors who examined G and who will be offered as expert witnesses on the cause of his symptoms, not only has G not suffered his symptoms since he left Fay for the Waldorf School, G also did not suffer these headaches while enrolled at Fay when he was on school trips away from the Fay classrooms, nor while on vacation breaks during the school year, nor over the summer recesses when away from Fay. This has been amply documented by G's health records at both Fay and the new school, along with the testimony of G, and his mother and father. For example, as G testified:⁶

Q. Over the summer, what happened to those headaches?

A. They went -- they almost completely went away -- I only got two or three. * * *

Q. Okay. And in the seventh grade, did your headaches start again?

A. Uh, yes.

Q. And did they start before or after you got back to the Fay School?

A. After.

Q. Okay. And compare the headaches that you got in seventh grade as compared to the ones you got in sixth grade?

A. Um, they were, uh, a lot worse. * * *

Q. How many times a week during seventh grade did you -- do you believe you got a headache after you got to school?

A. Probably, three or four.

(Ex. 11, Deposition of G, pp. 99-101)

Thus Plaintiffs' experts' diagnosis of G's symptoms relies in part on the striking fact that G experiences his symptoms while in the Fay classroom only, and not elsewhere. *See*, Def. Ex. 3, Dr. Carpenter Report, p. 1; Def. Ex. 19, Dr. Hubbuch Report pp. 1-2; and Def. Ex 20, Dr. Herbert Report, p. 1. Severe headaches, according to these experts as well by G's own

completed benefits of Fay's lengthy and costly educational program, along with the loss of all the advisors, instructors, coaches, and friends with whom G has grown since first grade, when he started at Fay. *See*, Second Amended Complaint (Doc. No. 43), paras. 74-76.

⁶ While this testimony occurred after the medical experts wrote their reports, they were informed of these facts well before they were confirmed at G's deposition.

testimony,⁷ substantially impair G’s ability to remember, concentrate, read and reason, all of which are “major life functions,” the impairment of any of which qualifies as a “disability” under the ADA. *See*, Title 42 U.S.C. §12182(a) and §§ 12102(1)(A) and 12102(2)(A).

(B) The First Circuit’s Diagnostic Requirements Applicable to These Experts

Notably, in considering evidence of ADA claims, courts should make their determination “in favor of *broad coverage* of individuals . . . to the maximum extent permitted . . .,” 42 U.S.C. 12102(4)(A)(emphasis added), and “resolve doubts about such questions in favor of disabled individuals.” *Dudley v. Hannaford Bros. Co.*, 333 F.3d 299, 307 (1st Cir. 2003). This is the lens through which this Court ought to consider the issues raised in this case, including those raised in Fay’s *in limine* motion.

As detailed further below, Dr. Carpenter will offer testimony that the Wi-Fi emissions (EMFs) from Fay’s use of Wi-Fi in its classrooms *can cause*, in persons having EHS, symptoms such as those suffered by G. Drs. Hubbuch and Herbert will then testify that, based upon their medical diagnosis of G, the Fay Wi-Fi is *in fact the cause* of his symptoms. Plaintiffs’ experts will thus testify in harmony with the First Circuit’s medical-causation case requirements.

In such cases the plaintiff is required to provide expert testimony, or other evidence, on two matters: (1) “general causation” (*i.e.*, that exposure to a certain substance *can cause* the manifestation of certain identifiable symptoms); and (2) “specific causation” (*i.e.*, that plaintiff’s symptoms *are caused by* a specific source). *See, e.g., Kerlinsky v. Sandoz Inc.*, 783 F. Supp. 2d 236, 240–41 (D. Mass. 2011)(required showing is “general causation, *i.e.*, that the drug *can* cause the injury, and specific causation, *i.e.*, that the drug *did* cause the injury in this case.”); *In*

⁷ G testified that when he had the headaches (four times a week by the end, see text), only “sometimes” he “could still focus and stay in school.” (Ex 11, G Dep., pp. 33-34).

re Neurontin Mktg., Sales Practices, and Prods. Liab. Lit., 612 F.Supp.2d 116, 123

(D.Mass.2009) (“In order to prevail in a pharmaceutical personal injury case, a plaintiff must establish two types of causation: general and specific.”).

General causation does not involve showing the cause of any particular individual’s malady or symptoms. Rather, “[g]eneral causation is established by demonstrating . . . that exposure to a substance *can cause* a particular disease.” *In re Neurontin Mktg.*, 612 F.Supp.2d 116 (emphasis added), *quoting* Mary Sue Henifin et al., *Reference Guide on Medical Testimony*, in *Reference Manual on Scientific Evidence* 439, 444 (Fed. Judicial Ctr.2d ed. 2000). *See also*, *Milward v. Acuity Specialty Products Grp., Inc.*, 639 F.3d 11, 15-17 (1st Cir. 2011). A widely-accepted methodology for establishing general causation involves reviewing several established factors (commonly referred to as the “Bradley Hill criteria”) and then using the “weight of the evidence” approach to determine the “inference to the best explanation.” *Milward*, 639 F.3d at 17 (1st Cir. 2011). While no individual factor is “a litmus test of general causation,” *In re Neurontin*, 612 F. Supp. 2d at 133, some courts have weighed more heavily certain factors.

For instance, in the *Neurontin* case, the court held general causation can be proved by an “association” between the use of a drug and certain identifiable reactions, when combined with some evidence showing that it was a “biological plausibility” that the drug could cause that reaction. *Id.* at 158–59. As the court noted, the existence of an association – even where the strength and specificity of the association is highly contested – “alone significantly strengthens the Plaintiffs’ case for admission under *Daubert*.” *Id.* In addition, the Court described biological plausibility as “a particularly crucial Bradford Hill factor.” *Id.* Therefore, even while there was not extensive evidence on the other Bradley Hill factors, the Court still found that the evidence was sufficiently reliable to warrant admission as evidence of general causation. *Id.*

After a plaintiff has provided sufficient evidence of general causation -- that a particular substance or stimulus “can cause” a certain malady or symptoms – evidence of specific causation must be provided. Specific causation “is established by demonstrating that a given exposure *is the cause* of an individual's disease.” *In re Neurontin Mktg.*, 2009 WL 3756328, at *2. In the case at bar, this requires evidence that the substance or stimulus involved (i.e., the Wi-Fi emissions at Fay) is in fact the probable cause of the symptoms being suffered by G.

The most common methodology used to develop an opinion on specific causation is a “differential diagnosis,” which the First Circuit has “repeatedly found to be a reliable method of medical diagnosis.” *Milward*, 639 F.3d at 17–19 (1st Cir. 2011). This method is as follows:

Differential diagnosis is the methodology employed by physicians to rule out possible alternative causes of a patient's disease, in which the physician examines, among other factors, the patient's medical history, occupation, and habits.

Allen v. Martin Surfacing, 263 F.R.D. 47, 61, n. 20 (D. Mass. 2009); *see also Rodriguez-Diaz v. Seguros Triple-S, Inc.*, 636 F.3d 20, 21 (1st Cir. 2011); Differential diagnosis has three steps:

A medical-causation opinion in the form of a doctor's differential diagnosis is reliable and admissible where the doctor (1) objectively ascertains, to the extent possible, the nature of the patient's injury, . . . (2) “rules in” one or more causes of the injury using a valid methodology, and (3) engages in “standard diagnostic techniques by which doctors normally rule out alternative causes” to reach a conclusion as to which cause is most likely.

In re Neurontin Mktg., 612 F.Supp.2d 116.

All three of the medical experts offered by Plaintiffs follow the First Circuit’s general and specific causation analysis and their qualifications and methods are more than adequate under *Daubert* to allow their opinions on such causation.

III. DAUBERT SHOULD NOT EXCLUDE THE PLAINTIFFS’ EXPERTS ON THE CLAIM FOR WHICH THEY ARE OFFERED AS EXPERTS

(A) The Red Herring Centrally Relied Upon in Fay’s *In Limine* Motion

Before discussing the *Daubert* requirements, Plaintiffs take on the red herring served up by Fay in an attempt to make these experts to be wild-eye “fringe” “outliers.” Fay argues repeatedly that, because some of Plaintiffs’ experts are in the minority on the issue of whether EMF can cause cancer or raise other health concerns involving the general population, “these experts will attempt to offer fringe views that are directly at odds with accepted scientific consensus.” (Fay Memo, p. 2) However, this case is neither about possible general health effects of EMF on the general population nor about EMFs’ potential to cause cancer. And in any event, as shown below, the cancer concern is no longer remotely “fringe” as one of Defendants’ experts was forced to concede just two weeks ago based on a new study (which that expert even referred to as the “gold standard”). So even though the effects of Wi-Fi and other low level EMFs on the health of the general population is no more the issue in this case than is the effect of peanuts when being discussed in a peanut allergy case, Plaintiffs’ experts’ views relating to general health and Wi-Fi are not fringe and should not be used to besmirch their credibility.

Defendants are correct that there is now a public debate about the safety of EMFs generally when humans are exposed to it over extensive periods of time, either from Wi-Fi, cell towers, “smart meters” that read by Wi-Fi electricity use in the home, or from use of cell phones. All of these are sources of what Defendants’ experts claim to be “low-level” sources of radio waves or EMF. All of these emit EMFs at levels well below the 1996 FCC standards.⁸

Some scientists, admittedly a minority including Dr. Carpenter, worry that growing evidence shows that such “low level” exposures can lead to all manner of adverse health effects

⁸ These old standards based their safety determinations on seeking the level at which EMFs would burn the skin, such as in a microwave. They did not consider non-thermal effects as all now admit. These standards were also formulated in 1996, when Wi-Fi was in its infancy and long before the recent cancer study caused such alarm as will be shown in the text.

in the general population, including the risk of cancer. The majority of scientists at present, as Defendants contend, loudly disagree. However, the debate and research continue, and particularly in light of a recent cancer study, it can be said that the jury is still out on the question. It is thus not yet known whether the current, care-free majority opinion here will in the future be seen as being dangerously wrong, as were the past opinions assuring the public that smoking caused no harm but was good for the nerves, that asbestos was a perfectly fine insulation for use in construction, and, even, that X-Rays were not dangerous and patients need not wear lead-lined shields to protect themselves. Such on-going debates are in the public interest.⁹

Until just recently, the adherents to the majority view, most notably Fay's experts in this case, have argued (and testified under oath) that *no study* shows that Wi-Fi or other low-level EHS can in any way biologically effect any human or animal. For example, in his deposition taken in this case on May 25, 2016, Fay's expert Dr. Foster, who trashes Plaintiffs' Dr. Carpenter's opinions, stated unreservedly that no biological effects have been documented from Wi-Fi exposure in either humans or animals:

⁹ At least most people think so, although one of the experts for Fay, Dr. Foster, disagrees. He has argued that microwave-health research was a "dead end" and should be closed down. *See* Ex. 23, *Microwaves, The Risks of Risk Research*, Nature, Vol. 330, Dec. 10, 1987. The research, Dr. Foster trumpeted, has produced "scientific noise, and "such search for hazards can go on too long, and guidelines for ending them must be established." Further, in a recent paper, Foster commented on countries such as China and Russia which have used the precautionary principal and have set EMF limits 100 times safer than Canada and the United States. Foster states: "The precautionary principle is well established in international law and enjoys widespread political support. However, it remains elusive in meaning and easily misused. And by their very nature, precautionary policies are set in the absence of scientific knowledge, not on the basis of such knowledge." Kenneth Foster also did a study on Wi-Fi exposure that was supported by the "Wi-Fi Alliance" (Foster KR, *Radiofrequency exposure from wireless LANs utilizing Wi-Fi technology*. Health Phys. 92:280-9, 2007). The Wi-Fi Alliance is sponsored by T-mobile, Texas Instruments, Sony, Samsung, Qualcomm, Nokia, Motorola, Microsoft, LG, Intel, Huawei, Dell, Comcast, Cisco, Broadcom, and Apple.

Q. No biological effects at all?

A. Haven't been established. * * *

Q. Are there any exposure levels that have been found to be carcinogenic in relation to rats to which they've been exposed?

A. As of present, no. *I'm not aware of any studies that demonstrate carcinogenic effects. I base that on the review by the International Agency for Research of Cancer that found the evidence was inconclusive and unpersuasive.*

(Ex. 12, Deposition of Kenneth Foster, pp. 77-78)¹⁰

Yet just one week after Fay's Dr. Foster gave the above-quoted sweepingly definitive testimony, the National Toxicology Program, a federal agency, in concert with the Illinois Institute of Technology, announced the results of a lengthy study finding that EMF has been found to cause cancer in rats, contrary to what Foster had just proclaimed. Moreover, before he knew of the study findings, Dr. Foster admitted that this study was reliable:

A. Yes. Well, the Illinois Institute of Technology and the principle investigator is highly experienced in this.

Q. How about the National Institute – the National Toxicology Program?

A. Yes.

Q. Why do you say they're reliable?

A. It's a standard -- *basically a gold standard organization that is widely recognized for lifetime animal studies.*

(*Id.*, pp. 79-80) (Emphasis added). Foster has now been forced to concede as follows:

With the NTP study results, Foster expects more governments to put out *cautionary guidelines* and radiation labeling for cell phones. He says he wouldn't be surprised if California adds RF radiation to its Proposition 65 list of carcinogenic chemicals, and if the IARC ups its classification rating from 2B: possibly carcinogenic to humans to 2A: *probably carcinogenic to humans*. "And they wouldn't be out of line in doing that," he says. "This is going to change the rhetoric in the field. People can point to much more hard evidence that [cell phone RF exposure] really is a problem."

¹⁰ This insouciant view is echoed by the Fay memo (p. 15) when it claims that "[e]very replicable study of the biological effect of EMF exposure finds no link between exposure to EMFs and physical symptoms."

(*See*, Ex. 13, IEEE *Spectrum* article, posted May 27, 2016)¹¹ The smugness that literally dripped off the pages of Dr. Foster's deposition transcript on this point just five weeks ago is now gone. Moreover, it is indeed a good thing that the public did not heed his call, many years ago (see footnote 9, above), to shut down all such research because, he contended, it was no more than "scientific noise." The carcinogenic findings by the NTP – the "gold standard" according to Dr. Foster's sworn testimony – obviously show that this is not just noise.

The above-discussed debate about the general health of long-term exposure to Wi-Fi while not on the "fringe," is not the issue for the experts in the case despite Fay's straw-man attempt to make it the target and then try to knock it down because they perceive that opinion to be easier prey. The *Daubert* standard focuses on the opinion at issue, not every other opinion an expert has offered in the past. Indeed, some of Fay's experts have offered truly fringe scientific views in their time.¹² The issues in this case are different and much more narrow, namely,

¹¹ As Ryan Knutson in *The Wall Street Journal*, July 6, 2016, stated notable quotes from decidedly non-fringe commentators about the NTP's study's cancer finding (Ex. 14):

It's a paradigm shift in my mind because this is the first study where tremendous care was taken to use nonionizing radiation, and not heat up tissue, and then find that nonionizing radiation caused tumors,' said Otis Brawley, chief medical officer at the American Cancer Society." David Andrews, a senior scientist at the Environmental Working Group, which has pushed for tougher safety regulations, said what the recent NTP study 'indicates is that there are the potential for more subtle, but potentially much more damaging health effects.'"

¹² One of Fay's experts, Dr. Stacy Eltit, has some distinctly minority scientific opinions. She testified that, *as a matter backed up in part by science*, her opinion is that the earth is no more than 6000 years old and that she does not believe in evolution (so much for the dinosaurs and the views of the entire scientific community). While these views may be used, if the Court finds it appropriate, to cross-examine her at trial on the efficacy of her science generally, Plaintiffs find no case law under *Daubert* that would completely disqualify her opinions in this case because of her other opinions. *See*, Ex. 15, Deposition of Stacy Eltit, pp. 15, 16, 186-195. As shown further below, cross-examination is preferred in the First Circuit as a way to handle such matters for both sides.

whether the opinions of Plaintiffs' experts qualify under *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993) to give their general and specific causation opinions relating to G and the Fay Wi-Fi emissions. See further below for the details of those opinions.

(B) The EHS Asserted by Plaintiffs' Experts Is Not A "Fringe" Concept

In considering Plaintiffs' expert opinions, it is also important for this Court to note that whatever can be said about cancer's causes, it simply is not a "fringe" matter to assert that EMFs from Wi-Fi are recognized to cause headaches and the other symptoms in people who are hypersensitive to it. For example, the Congressionally-appointed United States Access Board¹³ has published the following recommendation for federal buildings:

People with chemical and/or electromagnetic sensitivities can experience debilitating reactions from exposure . . . from electromagnetic fields emitted by computers, cell phones, and other electrical equipment.

The severity of sensitivities varies . . . Some people can enter certain buildings with minor accommodations while others may be so severely impacted that they are unable to enter these same spaces without debilitating reactions.

According to the Americans with Disabilities Act (ADA) and other disability laws, public and commercial buildings are required to provide reasonable accommodations for those disabled by chemical and/or electromagnetic sensitivities. These accommodations are best achieved on a case-by-case basis.

Reasonable accommodations . . . such as

- Require cell phones and computers be turned off
- [and] ...may include:
- Meet an individual at the door or outside to conduct business; Allow a person to wait outside or in car until appointment; Provide a means, such as a phone, intercom, bell, or buzzer to summon staff to an outside door for assistance; Permit business to be conducted by phone, fax, mail, or e-mail rather than in person; Allow participation in a meeting by speakerphone.

(Ex. 16, US Access Board's "Recommendations for Accommodations.")

¹³ The United States Access Board is an independent federal agency created by Congress in 1973 to ensure access to federal facilities by the disabled under the Americans with Disabilities Act. *See*, www.access-board.gov; *see also*, Section 508 of the Rehabilitation Act (29 U.S.C. § 794d) and Section 255 of the Communications Act (47 U.S.C. 255).

Case law concerning EHS is, as yet, sparse. It is however by no means dispositive in favor of Defendants' position here. The cases thus far particularly do not support Fay's accusation that EHS is a "fringe" concept or that "Dr. Carpenter's expert opinions are an outlier of fringe science, nothing more than his own personal beliefs." (Fay Memo, p. 15). Instead, various courts (and administrative agencies, such as the Social Security Administration Disability Section) have acknowledged EHS as a disability condition.

For example, there are a series of decisions involving a plaintiff named "Firstenberg." In the original action brought in New Mexico state court, the plaintiff petitioned to have a telecommunications company cease certain cell tower transmissions of low level EMFs that were exacerbating plaintiff's EHS. That case was removed to federal court because plaintiff's ADA claim arose under the laws of the United States. The federal district court to which the case had been removed then found that the ADA had been preempted by another statute and therefore could not provide for relief. However, the court made the following decidedly non-fringe comment about EHS which it referred to as "EMS":

Plaintiff resides in the City of Santa Fe, New Mexico and has been diagnosed with EMS. Individuals who suffer from EMS are affected by RFEs [radio frequencies which are also referred to as EMFs] transmitted from cell phones and cell towers. Several of AT&T's cell towers, also called "base stations," located in Santa Fe transmit signals that produce RFEs, which Plaintiff contends negatively affect his condition. Individuals with EMS experience symptoms such as seizures, hypertension, heart arrhythmia, severe insomnia, tinnitus, muscle spasms, twitching, eye pain, dizziness, nausea, migraine headaches, respiratory problems, and neuropathy. These symptoms impair their ability to stand, walk, think or breathe. (*Id.* ¶¶ 13(d), 17.) Because of his EMS condition, Plaintiff is considered disabled and has collected disability benefits from the Social Security Administration since 1992. Plaintiff also alleges that he is a qualified individual as defined by the ADA.

Firstenberg v. City of Santa Fe, N.M., 782 F. Supp. 2d 1262, 1266 (D.N.M. 2011) *rev'd and vacated*, 696 F.3d 1018 (10th Cir. 2012). The Tenth Circuit then reviewed the *Firstenberg* case

and vacated the district court's finding on jurisdictional grounds, but again acknowledged the existence of EHS:

Electromagnetic radiation is a form of energy ubiquitous in our modern world, associated with everything from WiFi networks to microwave ovens to power lines. Most of us do not notice it. Some individuals, however, apparently suffer from a condition known as electromagnetic hypersensitivity ("EHS"), which requires them to avoid exposure to sources of electromagnetic radiation. These sources include cell-phone towers, sometimes called "base stations," which emit a form of energy known as radiofrequency ("RF") radiation. *See generally* Federal Communications Commission, Radio Frequency Safety, <http://transition.fcc.gov/oet/rfsafety/>.

Firstenberg v. City of Santa Fe, N.M., 696 F.3d 1018, 1019–20 (10th Cir. 2012).

It was only in subsequent New Mexico state court litigation – the only one of these three *Firstenberg* cases that Fay cites in their motion (Fay Memo, p. 14) – in which the court did not accept the expert testimony. *Firstenberg v. Monribot*, 2015-NMCA-062, 350 P.3d 1205, 1209, *cert. denied*, 2015-NMCERT-006, 367 P.3d 850 (2015). In that case, the state court had noted that plaintiff had been "declared totally and permanently disabled by the United States Social Security Administration" because of his "electromagnetic sensitivities" and on that basis brought a nuisance claim against his neighbor for his neighbor's use of certain electronic devices. *Id.*, at 1210. After a review of the proffered expert testimony, the court dismissed the case because plaintiff's experts (a general physician and a neurotoxicologist) were found "not qualified" to testify regarding the issue of general causation. *Id.* at 1211. The court stated:

We will not do for Mr. Firstenberg what he has failed to do on his own behalf—that is, search the record in an attempt to demonstrate that his experts meet the standard of reliability required of expert scientific testimony pursuant to the *Alberico* factors.

Id., at 1214.

The court was *not* holding that no expert could testify with regards to general causation and EHS – or even that these specific experts could not potentially testify in regard to general

causation in the future. Instead it focused on the Firstenberg's failure to provide the court with sufficient legal foundation for admission under the state law.

Defendants also tout a series of older studies declaiming the existence of EHS or stating that more study was needed. One of those is the Health Canada Study (Fay Memo, p. 14). Yet subsequently, Canada has found as follows after a hearing in its Parliament and its issuance of the Standing Committee on Health's Report entitled "Radio Frequency Electromagnetic Radiation and The Health of Canadians," dated June, 2015:

One of the recommendations made by the Expert Panel was that Health Canada "investigate the problems of individuals with what's called electromagnetic hypersensitivity . . . with the aim of understanding their health conditions and finding ways to provide effective treatment." As Dr. Magda Havas explained to the Committee: Symptoms of electro hypersensitivity include headaches, chronic pain, chronic fatigue, sleeping problems, difficulty concentrating, poor short-term memory, mood disorders including depression and anxiety, dizziness, nausea, and tinnitus. As many as 3% of the population, one million Canadians, have EHS symptoms that are so severe they are unable to function in our modern world. . . . Symptoms can come on quickly and can require as long as a day to recover from, depending on the individual. She also stated that there was a need for better collection of data and better education for physicians relating to the effects of EMF and the condition of EHS, pointing to the Austrian Medical Society (which published a report on diagnosis and treatment of 38 HESA, *Evidence*, 28 April 2015, 1630 (Martha Herbert, Assistant Professor of Neurology, Harvard Medical School, Massachusetts General Hospital, As an Individual). Prof. Herbert co-authored "Autism and EMF? Plausibility of a pathophysiological link", which was published in a peer-reviewed journal in June 2013.

(Ex. 17, Report of the Standing Committee on Health, pp. 11, 12) Dr. Herbert, mentioned favorably just at the end of the above quote, is one of Plaintiffs' experts. (Def. Ex. 20)

Thus EHS exists according to the wide variety of authorities discussed above. Their *Daubert* scrutiny should be considered without Fay's red-herring that they argue a fringe matter.

(C) Plaintiffs' Medical Experts Satisfy *the Daubert Methodology*

For decades before *Daubert*, the dominant standard controlling the admissibility of expert testimony was the so-called "general acceptance" test as formulated in *Frye v. United States*, 293

F. 1013 (D.C. Cir. 1923). Under *Frye*, trial courts excluded from evidence any expert testimony based on a claimed scientific principle or discovery that had not been “sufficiently established to have gained general acceptance in the particular field in which it belongs.” *Id.* at 1014. General acceptance is no longer the test, it having been overruled by *Daubert*, using Evidence Rule 702 as a basis for doing so.

In discussing how lower courts should determine “the admissibility of novel scientific evidence at trial,” the Supreme Court held that “a rigid general acceptance requirement would be at odds with the liberal thrust of the Federal Rules and their general approach of relaxing the traditional barriers to opinion testimony.” *Daubert*, 509 U.S. at 588–89 (internal citations and quotations omitted). In its place, the Court directed lower courts to follow the guidelines of Federal Rule of Evidence 702, which provides a “flexible” inquiry, focused on “principles and methodology, not the conclusions that they generate.” *Id.* 598–99.

The First Circuit has summarized the requirements of Rule 702 as follows: “[A] proposed expert witness must be sufficiently qualified to assist the trier of fact, and . . . his or her expert testimony must be relevant to the task at hand and rest on a reliable basis.” *United States v. Diaz*, 300 F.3d 66, 73 (1st Cir. 2002); *see also, In re Neurontin Mktg., Sales Practices, & Products Liab. Litig.*, No. 04-CV-10981-PBS, 2009 WL 3756328, at *3 (D. Mass. Aug. 14, 2009) (“The trial court must determine whether the expert's testimony ‘both rests on a reliable foundation and is relevant to the task at hand’ and whether the expert is qualified.” quoting *Daubert*, 509 U.S. at 597.)

Importantly, *Daubert* neither requires nor empowers trial courts to determine which of several competing scientific theories has the best provenance.” *Ruiz-Troche v. Pepsi Cola*, 161 F.3d 77, 85 (1st Cir. 1998). While Plaintiffs believe that the Court will find these experts

persuasive when it hears their testimony, the Court need not agree with them. *See, e.g., Int'l Adhesive Coating Co. v. Bolton Emerson Int'l, Inc.*, 851 F.2d 540, 544-45 (1st Cir. 1988) (“The fact that an expert's opinion may be tentative or even speculative does not mean that the testimony must be excluded. . . . When the factual underpinning of an expert's opinion is weak, it is a matter affecting the weight and credibility of the testimony—a question to be resolved by the jury.”) (internal citations and quotations omitted). For the purposes of *Daubert*, the Court must therefore focus only on the following limited issue: whether Plaintiffs’ experts have sufficient qualifications and have based their opinions on sufficient facts, using “the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Milward v. Acuity Specialty Products Grp., Inc.*, 639 F.3d 11, 15 (1st Cir. 2011). Plaintiffs' experts do so.

Daubert “does not require that a party who proffers expert testimony carry the burden of proving to the judge that the expert’s assessment of the situation is correct.” *Milward*, 639 F.3d at 15 (internal citations and quotations omitted); *see also, Ruiz-Troche*, 161 F.3d at 85 (“*Daubert* neither requires nor empowers trial courts to determine which of several competing scientific theories has the best provenance.”). Instead, “[t]he proponent of the evidence must show only that ‘the expert’s conclusion has been arrived at in a scientifically sound and methodologically reliable fashion.’” *Milward*, 639 F.3d at 15 (quoting *Ruiz-Troche*, 161 F.3d at 85); *see also Blake v. Pellegrino*, 329 F.3d 43, 48 (1st Cir. 2003) (quoting *United States v. Paulino*, 13 F.3d 20, 23 (1st Cir.1994) (“If the court discerns enough support in the record to warrant a reasonable person in determining that the evidence [could support that which it sets out to support, then] the weight to be given to the evidence is left to the jury.”).

When assessing the reliability of expert testimony, the task is as follows: “‘to make certain that an expert, whether basing testimony on professional studies or personal experience,

employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.’” *Milward*, 639 F.3d at 15 (quoting *Kumho Tire*, 526 U.S. at 152). Once Plaintiffs have met this standard by a preponderance of the evidence, the experts’ opinions “should be tested by the adversarial process, rather than excluded for fear that jurors will not be able to handle the scientific complexities.” *Milward*, 639 F.3d at 15 (quoting *Daubert*, 509 U.S. at 596). This reliance on the adversarial process is based on the principle, foundational within the American trial system, that “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert*, 509 U.S. at 596; *see also Milward*, 639 F.3d at 15; *Currier v. United Techs. Corp.*, 393 F.3d 246, 252 (1st Cir.2004). The First Circuit has made this point with particularly clarity:

The burden is on opposing counsel through cross-examination to explore and expose any weaknesses in the underpinnings of the expert's opinion. *Coleman v. DiMinico*, 730 F.2d 42, 47 (1st Cir.1984) (Citations omitted) When the factual underpinning of an expert's opinion is weak, it is a matter affecting the weight and credibility of the testimony—a question to be resolved by the jury. *Payton*, 780 F.2d at 156.

Int'l Adhesive Coating Co. v. Bolton Emerson Int'l, Inc., 851 F.2d 540, 544–45 (1st Cir. 1988).

Plaintiffs do not believe that this Court will find the expert opinions they offer to be “weak.”

However, the burden is on opposing counsel, not the Court, “to explore and expose any weaknesses in the underpinnings of the expert’s testimony.” *Id.* at 545. Ultimately, the “weight and credibility of the testimony [is] a question to be resolved” at trial. *Id.*

With the above-stated standards in mind, we now specifically address the three experts' opinions involving EHS, their merit, and the adverse comments of defendants concerning those experts.

(D) Dr. David Carpenter

(1) Dr. Carpenter's Specific Opinion

Dr. Carpenter has stated his opinion as follows (Def. Ex. 3, p. 1):

It is my opinion that exposure to electromagnetic fields (EMFs) such as those associated with Wi-Fi do in some people cause a constellation of symptoms known as electro-hypersensitivity (EHS). These symptoms include headache, insomnia, fatigue, tinnitus, cognitive disturbances, abnormal sensation and dizziness. In some individuals these symptoms are accompanied by muscle twitching, abdominal pain and skipped heartbeats.

While I have never met nor examined “G”, the reports of the symptoms that he experiences when exposed to Wi-Fi at The Fay School are consistent with the conclusion that “G” suffers from EHS that is triggered by the Wi-Fi exposure at The Fay School. Added to all the scientific discussion that follows, it is noteworthy that his mother reports that “G” suffers these symptoms when he is exposed to Wi-Fi, most notably at the Fay School, and does not when he is not so exposed. I have also been informed that “G” has not been told that he has EHS.

It is also my opinion, based on the materials described below, that given the known biological effects of EMF at the intensity levels involved, it is biologically plausible that the symptoms described can be caused by such EMF.

(2) Dr. Carpenter’s Qualifications and Methodology More Than Meet the Requirements of Rule 702 and *Daubert*

It is frankly ludicrous to argue, as Fay does (Fay Memo, p. 7), that Dr. Carpenter is not qualified. His *curriculum vitae* (Ex. 18) is nothing if not impressive.¹⁴

¹⁴ He obtained both his undergraduate (1959) and medical (1964) degrees from Harvard and has been working in the field of environmental health ever since. While listing all of his impressive experience would break even the extended page limits, it is summarized thus: he has held positions with the National Institute of Mental Health, the Armed Forces Radiobiology Research Institute, as Director, and with the New York State Department of Health. He now serves as the Dean of the School of Public Health and the Environment at the University of Albany. He is a professor of environmental health sciences within the School of Public Health and administers, as Director, a separately-funded Institute for Health and the Environment. He has served as the executive secretary of the New York State Power Lines Project, which studied the effects on children who live near power lines. He has received federal grants as the principal investigator of sixteen separate and prestigious foundations and agencies, ranging from the United States Airforce, the National Institute of Health, the Defense Nuclear Agency, the EPA, the Pakistan-US Science and Technology Program (directed by the US National Academy of Scientists), the Department of the Army, the USAID, among others. (Ex. 18)

In addition to a wide array of peer-reviewed publications, such as those listed in his CV concerning environmental health (*Id.*, pp. 5-27), he has published several reviews and edited two books specifically on the “Biological Effects of Electric and Magnetic fields.” (*Id.*, p. 28) He has authored six full books, including one entitled “Biologic Effects of Electric and Magnetic Fields. (*Id.*) He has written an additional 50 book chapters and reviews (*Id.*, pp. 28-31) and testified on many occasions in addition to those “cherry picked” by the defense. (Ex. 19, Deposition of Carpenter, p. 208)

Because of his extensive knowledge on the subject, he has been invited to and did make a presentation to the Presidents’ Cancer Panel on power line radiofrequency fields and cancer, and he has also testified on the subject of adverse health effects of EHS on humans before the United States House of Representatives. His current granted research activities at his University focus on the general subject of environmental causes of human disease and he participates in various symposia. He has served on over thirty national, state, local and international committees, all relating to health matters. (Def. Ex 3, Carpenter Report, section(3)).

His methodology for coming to his conclusion that EHS can cause the symptoms suffered by G at Fay in those persons afflicted with EHS is as fully adequate as his experience is impressive. It is found at his expert report at pages 2 through 5. His affirmative opinion is based upon numerous reports that span decades including: one in 1978 that EMF resulted in temporary changes in human electroencephalogram and a study thereon; in a 1998 study reporting that EMFs slow brain potentials with visual monitoring tasks; a recent peer-reviewed publication in the America Physiological Society of a blinded study showing that EMF alters alpha brain waves; and reports and writings about the effects of EMF on brain waves. *See*, Def. Ex. 3, Carpenter Report, pp.2-5) He also cites two studies from the *Journal of the American Medical*

Association and the *Journal of Cerebrum Blood Flow and Metabolism* showing altered glucose metabolism of the brain from prolonged EMF exposure. He goes on to cite many other reports showing how EMF indeed has physiological effects, making it plausible that these effects can cause symptoms in certain people. He then focuses on “two careful human studies of EHS that have shown clearly that some individuals who report being brain sensitive to EMF can correctly report onset of symptoms when exposed in a blinded fashion,” and he goes into the details of those two studies. He then analyzes an ongoing chronicle of a female physician who reports suffering of EHS and a double-blinded provocation study confirming the onset of her symptoms. Dr. Carpenter is an excellent candidate to analyze these reports because he has managed much of his own testing on the toxicology and human effects of PCB, a subject on which he has frequently testified in cases not mentioned in the defendants’ attack on his credentials. (Ex. 19, Carpenter Dep., pp. 15, 208)

Defendants’ assertion that Dr. Carpenter did not consider adverse reports and studies, Fay Memo, p. 13, is simply untrue. Specifically, he addressed the high FCC standards relied upon by defendants (Fay Memo, p.12). Indeed, he also discusses and notes various adverse provocation studies, which suggest that those claiming to have EHS cannot distinguish when EMF has been activated from when it has not been activated. These studies include both the studies of one of Fay’s primary experts, Dr. Eltiti, who had not even been designated as an expert by Fay until after Dr. Carpenter wrote his report. Dr. Carpenter has also explained why he does not rely on certain studies, namely, that “these studies were done with short term exposures and very limited range of frequencies and intensities” (Def. Ex 3, pp. 5). His report goes on to acknowledge that some persons reporting adverse reactions to EHS symptoms clearly have a psychological component, but he then goes on to justify why he bases his opinion on other studies despite those

adverse studies. (*Id.*) Finally, he takes into account the Bradley Hill Criteria which he acknowledges “are commonly used to evaluate the degree to which evidence allows one to establish causation.”

In considering all the above, which Dr. Carpenter’s report summarizes at Def. Ex. 3, pp. 1-6, it is equally untrue for Fay to argue that Dr. Carpenter relies primarily upon, and indeed “promotes” (Fay Memo, p. 10) the Bioinitiative Report which Defendants contend to be continually discredited. (*Id.*) While he mentions that report, he does not rely on it for his conclusions. He only contrasts it and its precautionary recommendation of much lower EMF levels than were authorized by the 20 year-old conclusions of the FCC. (Def. Ex. 3, p. 2) Moreover, defendants will no doubt remember that during his deposition, he explained that the EMF levels stated therein were “goals” and specifically that he was not urging them in this case (Ex 19, Carpenter Dep., pp. 46-47) To argue, therefore, that he principally relied on this study, or to single out his one reference to it as being paramount, is without any force to say the least.

(3) Defendants' Attacks on Dr. Carpenter Do Not Preclude His Testimony

(a) The “Hired Gun” Allegations Made by Fay

It takes way more than defendants’ assertions to disqualify Dr. Carpenter as a hired gun. Indeed, in the only First Circuit case cited by Defendant where an expert was disqualified for being a “hired gun,” *see*, Fay Memo, p. 12 (citing *Tokio Marine & Fire Ins. Co. v. Grove Mfg. Co.*, 762 F. Supp. 1016, 1018 (D.P.R. 1991), *aff’d* *Tokio Marine & Fire Ins. Co. v. Grove Mfg. Co.*, 958 F.2d 1169 (1st Cir. 1992)), the court went out of its way to say that an expert is not disqualified even where “that a person spends substantially all of her time consulting with attorneys and testifying in trials.” *Id.* at 1018.

In *Tokio Marine*, the First Circuit disqualified the expert witness only after learning that he was just an “instant expert” who “admitted to having testified as a professed expert in an extraordinary array of [at least 18] dissimilar fields” and also lacked “the experience, training or education to testify” on the relevant issues. *Tokio Marine*, 958 F.2d at 1174–75. In addition, the expert admitted that he had helped prepare the plaintiff’s case by calling potential witnesses on the telephone “without revealing his identity to secure information helpful to his client.” *Id.* In light of all these facts, the First Circuit upheld the district court’s decision to disqualify the expert as a “hired gun.” *Id.* at 1175. It had nothing to do with the facts argued by the Fay defendants, namely that Carpenter spends time advancing his expert opinions on EMF and its potential harms, nor did *Tokyo Marine* find that an expert’s views made him a hired gun if those views were in the minority, as Fay claims to be the case with Dr. Carpenter.

In the vast majority of cases where a defendant seeks to criticize an expert’s previous opinions or testimony, the court leaves that issue for cross-examination. For instance, in *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F. Supp. 2d 147 (D.R.I. 2009), the court confronted a battle of the experts with regards to damages in a patent case. Defendant moved to preclude the testimony of plaintiff’s expert, claiming that the expert’s approach was “unreliable” and that the expert’s prior opinions and testimony in numerous other cases (including cases involving the same plaintiff) made him a biased “hired gun.” *Id.* at 151-52. The court rightly denied the defendant’s motion, explaining that the challenge essentially “comes down to is disagreement with [the expert’s] approach,” further noting that the defendant is “free to cross-examine [the expert] about his [approach], his testimony in other patent cases, his prior testimony for Microsoft, and his prior opinions” *Id.* This is the approach that this Court should follow.

(b) Dr. Carpenter’s Past Testimony Should Not Disqualify Him

The opinion offered by Dr. Carpenter in this case is not the same as the prior cases cited by defendants and this Court must make its own assessment under *Daubert* whether Dr. Carpenter is qualified to offer the opinion and testimony proffered here. Defendants nonetheless cite to six cases¹⁵ to argue that Dr. Carpenter's opinion relating to EMF causing safety harms generally (not concerning the EHS suffered by a small minority as he seeks to do in this case) has "repeatedly been rejected or given very little weight by tribunals" (at Fay Memo, p. 8).¹⁶

The cited cases are not grounds to disqualify the opinion offered by Dr. Carpenter here:

- In the Washington case (*Lahey v. Puget Sound Energy, Inc.*, 176 Wash. 2d 909, 913, 296 P.3d 860, 862 (2013)), Fay Memo, p. 8, the state Supreme Court affirmed the lower court's disqualification of Dr. Carpenter noting particularly that (1) Dr. Carpenter "did admit, however, that he discounted studies and data that showed no EMF-disease link when reaching his conclusions, especially newer studies" and (2) "his admission that he selectively used data...." *Id.*, at 916, 921 (at Def. Exhibit 7, Doc. 59-7, pp. 5,7. In contrast, Dr. Carpenter addressed these very concerns in the opinion offered here, explaining at his deposition "My expert report is focused on radio frequency radiation effects on the nervous system, and I certainly consider positive and negative studies, I acknowledge negative studies in my report, and I base my conclusions on the weight of the evidence." (Ex. 19, Carpenter Dep., p. 91) A review of his report (Def. Ex. 3) confirms that Dr. Carpenter acknowledged publications by skeptics of EHS and the provocation studies by G.J. Rubin and by defense expert Stacy Eliti (the two principle studies relied on by defense expert Kenneth Foster).

¹⁵ Defendants cite to two additional cases, in footnote 5 at Fay Memo, p. 8, in which Dr. Carpenter's testimony was excluded. Both concerned opinions on polychlorinated biphenyls ("PCBs") contamination, whether parties involved had higher levels of PCBs in their blood, and proposals for medical monitoring programs, the latter of which both courts cited Dr. Carpenter's lack of a medical license to be problematic for accepting his opinion on that issue. *See, Allgood v. Gen. Motors Corp.*, No. 12-CV-10077, 2006 WL 2669337, at *27 (S.D. Ind. Sept. 18, 2006); *Clopton v. Monsanto Co.*, No. 03-CV-3369, 2007 WL 7604386, at *1 (N.D. Ala. Mar. 8, 2007). These cases are not relevant to the Court's analysis of Dr. Carpenter's qualifications to give the opinion proffered in this case.

¹⁶ If past rejections by other tribunals and factfinders were grounds to disqualify, then defendants' own expert Edward Boyer would suffer the same fate. *See*, Ex. 20, Deposition of Edward Boyer, pp. 12-22, enumerating the cases in which he testified including those in which the verdict came back for the opposing party.

Additionally, the *Lakey* case concerned whether homeowners had a "reasonable fear" of EMF exposure from a nearby power substation and thus focused on whether EMF exposure causes adverse health effects *to the general public*; it did not address, as is the case here, specific symptoms suffered by an individual diagnosed with Electromagnetic Hypersensitivity Syndrome.

- The Kentucky Public Service Commission decision (Fay Memo, p. 9) also did not address hypersensitivity to EMFs of a small subset of the population. Rather the homeowners involved failed to prove to the Commission that they had a "verifiable health or safety concern in regard to the EMF generated by the enhanced transmission line" running underneath their property. As stated in the Commission's Order in Def. Ex. 8, Doc. 59-8, pp. 3-4, the homeowners offered Dr. Carpenter to testify "to his beliefs regarding the alleged dangers of EMF exposure to human health. ... [and] that a causal link exists between EMF exposure and increased risk of neurodegenerative diseases such as Alzheimer's and certain cancers." While the Commission did not credit Dr. Carpenter's general opinion, he was not disqualified through a *Daubert* analysis, and the Commission found against the homeowners on their challenge to the transmission line explaining that "[i]n the absence of a mandatory EMF standard in the Commonwealth [of Kentucky] or *reliable evidence demonstrating actual harm* to health or safety, the Commission further finds that there is no basis to require EKPC [the power company] to relocate the transmission line from its existing location on the Barkers' property." Def. Ex. 8, Doc., 59-8, pp. 13-14. Once again, EHS was not at issue nor was Dr. Carpenter disqualified.
- The Pennsylvania Public Utility Commission decision, (Def. Ex. 9), involved a utilities company (the "Company") seeking authorization to construct a new transmission line approximately 101 miles in length in conjunction with a request for authorization to construct a new substation. Protests were filed by various groups, including Saw Creek Estates Community Association (SCECA). They argued that safety concerns over EMF exposure required the Company to reroute its line around their property. In support of their position, SCECA offered the testimony of Dr. Carpenter and his opinion that magnetic fields from power lines *may cause cancer*. The quote from this decision, (Fay Memo, p. 9), was not a disqualification of Dr. Carpenter under *Daubert* but a footnote comment to the finding by the Commission that "there is no reliable scientific basis to conclude that exposure to power frequency EMF from the proposed Susquehanna-Roseland transmission line will cause or contribute to adverse health effects in children or adults along the proposed route of the line." Def. Ex. 9, Doc. 59-9, p. 210. This involved cancer and was long before the current NTP study creating "a whole new paradigm." (*see above*)
- The Minnesota Utilities Commission (Fay Memo, p. 9) is another case of an administrative body reviewing an application for authorization to construct an electrical transmission line to which property owners objected based on concerns over the proposed transmissions line's impact on the health and safety of persons living in the vicinity of the route. Dr. Carpenter's opinion on potential dangers to the general public's health from increased exposures to EMF was not disqualified under *Daubert*

but was rejected by this Commission as a basis to deny a permit for the transmission line. While acknowledging studies exist that indicate an association between EMF exposure and some diseases, the Commission found the studies presented were not conclusive and were insufficient for a finding that the property owners would suffer from the proposed transmission line. Def. Ex. 10, Doc. 59-10, pp. 42-44. Again, not a case involving individual hypersensitivity to EMF.

- Nor did the British Columbia Utilities Commission cited by defendants disqualify Dr. Carpenter's opinion under *Daubert* or otherwise. Rather, he "was tendered and accepted as an expert witness qualified to provide opinion evidence as a public health specialist with expertise in electrophysiology, low frequency electromagnetic field bio-effects, and radio frequency and microwave radiation bio-effects." Def. Ex. 11, Doc. 59-11, p. 20 (cited at Fay Memo, p. 9). While the Panel ultimately gave "little weight" to Dr. Carpenter's position, his opinion was considered and assessed by the fact finder as should be permitted here.
- The State of Maine Public Utilities Commission assessed whether the use of "smart meters," as implemented and operated by Central Maine Power Company is a safe, reasonable, and adequate utility service as required by statute. The Commission received written testimony and documentation on this issue as well as held a public hearing and received post-hearing submissions which included testimony from Dr. Carpenter and other experts. Dr. Carpenter's opinion was not disqualified. Rather, after considering the various experts' opinions the Commission found the scientific evidence with respect to human health impacts from RF emissions to be "inconclusive" and thus did not support a finding that the use of smart meters by the power company was "unsafe" under Maine's statute governing utilities. (Def. Ex. 12, Doc. 59-12, p. 66.) Notably, the Commission went on to observe:

"By this finding, we do not intend to diminish the concerns of Mr. Friedman and the intervenors [who presented Carpenter's testimony] regarding the possible health impacts from RF emissions. We concur with the recommendations of the WHO, CCST and others that continued research should be done on both the thermal and non-thermal impacts on human health from RF emissions. This is especially the case given the pervasiveness of RF emitting devices in our society. " (*Id.*, at pp. 66-67.) This caution was again long before the current NTP study finding and had nothing to do with EHS.

These prior cases thus have nothing to do with the testimony Dr. Carpenter would give in this case and should not disqualify him if, as Plaintiffs contend, his qualifications and methods qualify.

(E) Dr. Jeanne Hubbuch's Background and Opinion Certainly Qualify

(1) Her Specific Opinion

Her opinion is a specific causation diagnosis (Def. Ex. 19, p. 1):

. . . it is my opinion to a reasonable degree of medical certainty that G is adversely affected by the prolonged exposure he has to the Wi-Fi radio waves emitted from the Fay school Wi-Fi. When he is exposed to this Wi-Fi, he experiences headaches, dizziness nausea, Tinnitus, and chest pressure. The condition causing these symptoms is known as Electromagnetic Hypersensitivity Syndrome (“EHS”).

(2) Dr. Hubbuch’s Qualifications

Even Fay concedes Dr. Hubbuch’s general qualification as a “competent medical professional.” (Fay Memo, p. 25) She is more than that and adequately capable of doing the diagnosis of the cause of G’s symptoms (Def. Ex. 19, p. 4 and resume following at pp. 6-8). As she states:

I have been a practicing physician for over 35 years. I am Board Certified in Family Practice and in Environmental Medicine. I have taken a special interest in the effects of the environment on individuals and have focused on chronic conditions such as Chronic Fatigue Syndrome, Multiple Chemical Sensitivities, Autism, and Fibromyalgia. In addition, the information and principles which are used to investigate environmental causation are taught by the American Academy of Environmental Medicine (“AAEM”). I have taken all of its basic courses, attended many annual meetings, and I am certified (as of 1994) as a fellow by AAEM. Electromagnetic Hypersensitivity Syndrome is also the subject of lectures by Dr. Dietrich Klinghardt and Dr. Martha Herbert which I have attended or reviewed. I have read numerous articles on the subject over the years.

These qualifications surely exempt her from the likes of the disqualified expert in *United States v. Brown*, 415 F.3d 1257, 1269 (11th Cir. 2005) (cited at Fay Memo, p. 25) where the expert was a botanist and sought to give an opinion on chemistry (*Id.*), and from the disqualified expert in *Wilson v. Woods*, 163 F. 3d 935, 937 (5th Cir. 1999) (expert excluded due to lack of “training,” “experience,” and “qualifications,” despite teaching college level classes on causes and origins of fire, because he never taught accident reconstruction courses nor received a degree or certification in accident reconstruction.) (also cited at Fay Memo, p. 25). Dr. Hubbuch’s experience as a doctor gives her just the experience lacking in the cases cited by Fay.

(3) Dr. Hubbuch's Methodology More Than Qualifies

Dr. Hubbuch's report is worth quoting in detail because doing so assists in refuting Fay's truly scattershot criticism of it. She first notes the diagnostic facts obtained from G's mother:¹⁷

-- G has been a student at The Fay School since first grade (2009). Until the fall of 2013, he suffered none of the symptoms described above. He was a happy school boy who enjoyed attending classes, playing sports and had many friends. He looked forward to going to school;

-- His symptoms were experienced while he was in school at Fay and they abated when he left school and returned home;

-- The symptoms returned when he returned to school the next day;

-- During holidays and over the summer recess when he was not at Fay, he did not experience these symptoms;

-- At Fay, Wi-Fi is frequently in use. Each classroom has Wi-Fi radio waves beamed to the classrooms from an access point and the students all use laptops or other devices by which they are connected to the internet by the Wi-Fi for substantial periods of time during class. Wi-Fi radio waves are also emitted in the hallways and in other indoor common areas;

-- G experiences the symptoms discussed above when he is in these classrooms, hallways, and common areas;

--Nurses' records from the school reveal that G frequently had to leave classes because of these symptoms;

¹⁷ Fay complains that Dr. Hubbuch was told the symptomatology before examining G, which she then did, from "unverified information provided by G's mother." (Fay Memo, p. 29) Yet that is such a classic way of doing things that it has been deemed reliable enough to be an exception to the hearsay rule. Fed. R. Evid. 803(4) allows admissions of statements made to doctors "made for purposes of diagnosis or treatment; (2) [if they] pertained to (i) medical history, (ii) past or present symptoms, pain, or sensations, or (iii) about the inception or general character of the cause or external source thereof; and (3) the statement must have been reasonably pertinent to diagnosis or treatment. *Danaipour v. McLarey*, 386 F.3d 289, 297 (1st Cir. 2004). Notably, "[t]here is no requirement, either in the text of the Rule, or the case law, that the speaker be the patient himself." *Bucci v. Essex Ins. Co.*, 393 F.3d 285, 298 (1st Cir. 2005). "[S]tatements by bystanders, *family members*, and others, made for the purposes of treating an injured person and pertinent to that treatment, have often been admitted under Rule 803(4)." *Id.* (emphasis added) G's mother's statements to Dr. Hubbuch were surely made for the purposes of diagnosing her son.

-- G's symptoms over time became much more severe, especially the headaches. They started earlier in the day at Fay and became daily. This was interfering with his ability to do homework in the evening due to persistence of his headaches;

-- In January, 2016, G withdrew from Fay pending the results in this lawsuit and started attending The Waldorf School in Lexington, Massachusetts. The Waldorf School does not have Wi-Fi in its classes or hallways. G has not experienced the symptoms he experienced at Fay since he has started attending classes at The Waldorf School;

All of these facts have been shown not only from the mother's recital of them, which is enough,¹⁸ but are also corroborated by G's own testimony, Fay's nursing records showing the times that G reported to the nurse with headaches, Fay's office records showing additional school leave, the absence of Wi-Fi (and headaches) in the Waldorf School (*see*, Ex. 10, the testimony of Waldorf administrator, Jason Ek, discussed, *supra*) and G's testimony that he had these headaches at Fay but does not get them at his new school.

In addition to these facts, Dr. Hubbuch did an *extensive* differential diagnosis to rule in, or out, or diminish the likelihood, other possible causes of G's combination of symptoms, namely "headaches, dizziness, nausea, tinnitus, and chest pressure." Def. Ex. 19, Hubbuch Report, p. 1). This included the following (*Id.*, pp. 2, 3):

An MRI done on G's brain and spine ruled out any brain mass or other growth that could be the cause of his headaches;

G tested positive for dust mites, weeds and nuts but the symptoms here are different and thus these are not the cause of the symptoms G experienced while at Fay;

I personally tested G for Lyme disease and ruled out this disease as the cause of his headaches because the test came back negative. Testing for Lyme disease

¹⁸ G's mother learned of G's symptoms on a daily basis when G told her of them. Her knowledge of them is thus acquired from a reliable source, namely G who was telling his mother of a then existing medical condition. *See*, Rule 803(3) admitting, over hearsay objection, "[A] statement of the declarant's then-existing state of mind (such as motive, intent, or plan) or emotional, sensory, or physical condition (such as mental feeling, pain, or bodily health); *see also*, *United States v. Rivera-Hernandez*, 497 F.3d 71, 81 (1st Cir. 2007). When the mother thereafter told Dr. Hubbuch of these symptoms, that was likewise reliable. *See*, footnote 17.

involves use of a blood sample. Instead of using a local laboratory to test G's blood, I sent his blood sample to Igenex California, a lab where the Western Blot test is administered. It uses two species of *Borrelia Burgdorferi* and reports in both IgM and IgG. I did this because, in my opinion, this is the most accurate and effective test known for Lyme disease. Moreover, Lyme disease would more likely cause a constant headache, not intermittent headaches, and would also cause other symptoms that G did not have;

G has been tested for the presence of other toxins that could cause these symptoms, and these tests have all come back negative;

G has been tested for mold allergy at Children's Hospital by Dr. Bonilla; and the results were negative;

G has been tested for eye strain and other eye conditions that could cause headaches, and these tests came back negative;

G has been given the ANA test for the presence of any autoimmune disorder, some of which can. cause headaches and other of his symptoms, and this test came back negative;

G has been given a series of comprehensive blood tests for anemia and infections which might cause his symptoms, and these have come back negative;

G has been tested for inflammation that might cause headaches, and this came back negative; * * *

There are no reports that G is sensitive to odors of any kind and his symptoms do not occur in grocery stores or other public places which could expose him to contaminants causing such symptoms;

G's home has been checked for mold, and there is none present.

In the face of the above, it is flatly incorrect to argue that Hubbuch "ignored other possible causes." (Fay Memo, p. 29) Nor is there any merit to the notion that Dr. Hubbuch provided an "unsupported diagnosis at Mother's request, after their first meeting." (Fay Memo, p. 29) Dr. Hubbuch's differential diagnosis was very well supported by all the tests done and the underlying facts. There was only a search for the truth from the very first when G's mother sought all possibilities ruled in our out. *See*, Ex. 24, the email G's mother sent to Dr. Hubbuch before their first meeting. That email described G's symptoms suffered at Fay (all of them, not

just the headaches in isolation), asked if the problem could be EHS, and specifically stated: “I of course want to rule out other causes and for you to tell me I am crazy.” *Id.*

When Dr. Hubbuch saw the mother, learned more details about the facts and the tests already done up to that point by G’s primary care physician, she wrote a letter to Fay reciting symptoms, numbers of absences, prior medical history and rule outs already done, and then stated that it was her opinion that G was being affected by Fay’s Wi-Fi and that the “precautionary principle” should apply. Thereafter, Dr. Hubbuch’s final diagnosis stated in her expert report was made after more work as articulated in the above-quoted differential diagnosis found in her expert report.

Fay points to *Sutera v. Perrier Grp. of Am. Inc.*, 986 F. Supp. 655, 660 (D. Mass. 1997), for the proposition that the testimony of Dr. Herbert must be excluded. *Sutera* not does not involve the same proffered testimony as that offered by Dr. Hubbuch. It did not involve separate experts on both general and specific causation, nor did it discuss the relative expertise required to opine on those different areas. Instead, the expert at issue in *Sutera* seems to have provided testimony regarding both general and specific causation without distinguishing between the two and despite lacking the expertise to provide general causation testimony. For that reason, the Court found that, while as a treating physician the expert was qualified to “diagnose” the disease, that did not qualify him to “asses its genesis.”

That is not the situation in Dr. Hubbuch’s case. Plaintiffs already have an expert who will testify about general causation (i.e., Dr. Carpenter’s observed correlations, the studies, the biological plausibility, etc, discussed above). Dr. Hubbuch, as treating physician, is simply testifying as to the differential diagnosis which eliminated other likely causes for G’s symptoms besides EHS. *See, e.g., Milward v. Rust-Oleum Corp.*, No. 13-2132, 2016 WL 1622620, at *2

(1st Cir. Apr. 25, 2016) (describing differential diagnosis as “essentially a process of elimination”); *Allen v. Martin Surfacing*, 263 F.R.D. 47, 61, n. 20 (D. Mass. 2009) (“Differential diagnosis is the methodology employed by physicians to rule out possible alternative causes of a patient's disease, in which the physician examines, among other factors, the patient's medical history, occupation, and habits.”).

Fay also argues that Dr. Hubbuch was not able to *definitively* rule out every other possible cause of G’s symptoms. Yet that is simply not a requirement for an admissible differential diagnosis. *See, e.g., In re Neurontin*, 2009 WL 3756328, at *7 (“Though an expert should consider and analyze alternative causes of a disease or side-effect, he or she is not required to rule out each and every other possible cause before offering a causation opinion.”); *Baker v. Dalkon Shield Claimants Trust*, 156 F.3d 248, 253 (1st Cir. 1998) (“Why this opinion should be regarded as “guesswork” or without “basis” (the district court's terms) is nowhere explained Indeed, “differential diagnosis” is a standard medical technique.”).

Dr. Hubbuch’s was a competent differential diagnosis of the potential causes of the combination of symptoms which are the ones centrally associated with EHS. While this process may “vary from case to case,” the “core of differential diagnosis is a requirement that experts at least consider alternative causes.” *In re Neurontin*, 2009 WL 3756328, at *8-10, (citing *In re Paoli Railroad Yard PCB Litigation*, 35 F.3d 717, 758–59 (3d Cir.1994); *see also Milward v. Rust-Oleum Corp.*, No. 13-2132, 2016 WL 1622620, at *2 (1st Cir. Apr. 25, 2016).

Fay is not helped in its attack (at Fay Memo. P. 26) on Dr. Hubbuch’s differential diagnosis by its citation to *Milward v. Acuity Specialty Products Grp., Inc.*, 969 F. Supp. 2d 101, 109 (D. Mass. 2013). In *Milward*, the immutable fact was that 70% of the cases reporting the

illness involved, Acute Promyelocytic Leukemia, are of unknown cause medically. “When the causes of a disease are largely unknown . . . differential etiology is of little assistance.”). *Id.*

In an effort to take cover in *Milward*, Fay quotes one of their experts, Dr. Boyer, as testifying that Dr. Hubbuch “ignored all the unknown causes of headaches, idiopathic headaches. . . . meaning that the cause is unknown.” (Fay memo, p. 27) Yet G’s headaches are only one of the combination of the symptoms which G experienced while in Fay’s classrooms, which include nausea, chest constriction, tinnitus (ear ringing), and nosebleeds, along with headaches.¹⁹ This is a different proposition altogether than headaches by themselves of which there are many origins and which come unaccompanied by the other symptoms G suffered. Moreover, none of their experts explained away the significant and rather obvious reliance Dr. Hubbuch placed on the fact that G experiences this combination of symptoms at Fay and not anywhere else.

Nor can Fay take comfort in its quote of a case rejecting “*ipse dixit*” expert opinions. (Fay Memo, p. 28 citing *Ortiz-Sempritt v. Coleman Co., Inc.*, 301 F. Supp.2d 116, 121 (D.P.R. 2004)) The opinion in *Ortiz-Sempritt* was considered *ipse dixit* because, while the expert was trying to give an opinion of the cause of a fire (*Id.*, at 121) he had nowhere near enough command of the facts:

...it is patently clear that Mr. Bogert [the expert] lacks any foundation for his theory that an electrostatic discharge occasioned the fire. Mr. Bogert did not inspect the generator, the scene of the accident, *nor did he interview plaintiffs in this case.* . . . Mr. Bogert was unable to state whether the four conditions listed in the National Fire Code, Volume 14, which he relied upon for his opinion, were fulfilled. Such lack of knowledge and preparation on behalf of an expert is disturbing, and shows that Mr. Bogert's opinions are not predicated *upon any available facts, studies, or testing.* "Nothing requires a district court to admit

¹⁹ G did not experience all these symptoms all the time but the combination occurred on and off and mostly the symptoms came together, or in twos and threes, rather than in isolation. *See, e.g.*, Def. Ex. 19, Hubbuch Report.

opinion evidence which is connected to existing data only by the *ipse dixit* of the expert.

Ortiz-Sempit thus has no relevance to Dr. Hubbuch given all the testing she did, the facts she considered, her examination of G, the tests done by other doctors, hospitals, and medical laboratories she considered, all of which allowed her to meaningfully consider a plethora of other possible causes.

Once there has been an adequate differential diagnosis as done here, it “should be tested by the adversarial process, rather than excluded for fear that jurors will not be able to handle the scientific complexities.” *Milward*, 639 F.3d at 15 (quoting *Daubert*, 509 U.S. at 596). As noted above, this reliance on the adversarial process is based on the principle that “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert*, 509 U.S. at 596; *see also Milward*, 639 F.3d at 15; *Currier v. United Techs. Corp.*, 393 F.3d 246, 252 (1st Cir.2004). The First Circuit has reaffirmed this point with particular clarity:

The burden is on opposing counsel through cross-examination to explore and expose any weaknesses in the underpinnings of the expert's opinion. *** Moreover, the fact that an expert's opinion may be tentative or even speculative does not mean that the testimony must be excluded so long as opposing counsel has an opportunity to attack the expert's credibility. *** When the factual underpinning of an expert's opinion is weak, it is a matter affecting the weight and credibility of the testimony—a question to be resolved by the jury. ***

Int'l Adhesive Coating Co. v. Bolton Emerson Int'l, Inc., 851 F.2d 540, 544–45 (1st Cir. 1988)

(citations and quotations omitted). This Court will, Plaintiffs submit, be impressed that Dr.

Hubbuch's opinion is neither shaky nor weak.

(F) Dr. Martha Herbert's Background and Opinion Certainly Qualify

(1) Her Background

Her Report (Def. Ex. 20, p. 1) summarized her experience as follows:

I am a pediatric neurologist and neuroscientist at the Massachusetts General Hospital, and an Assistant Professor in the Department of Neurology of Harvard Medical School. I have been certified in the subspecialty Neurodevelopmental Disorders. I founded and direct the TRANSCEND Research Program (Treatment Research and NeuroScience Evaluation of Neurodevelopmental Disorders) at the Massachusetts General Hospital and Martinos Center for Biomedical Imaging at MGH-Charlestown Navy Yard. Our research team studies brain and systemic pathophysiology associated with neurodevelopmental disorders, utilizing brain imaging (MRI, MEG, EEG) and systemic biomarkers.

Her bibliography is very impressive and she has done extensive study and writing on EHS/EMF. (*Id.*) She has also extensively studied the parallels between EHS physiology and Autism, thus immersing her further in EHS studies. She is a highly qualified doctor to give a differential diagnosis which is the essence of her report.

(2) Her Specific Opinion

Her opinion is similar and indeed expands upon the opinion of Dr. Hubbuch. Because of the studies she has done, she not only makes the differential diagnosis that Dr. Hubbuch makes to the effect that G suffers from EHS, she also gives helpful elaboration on some of the physiological effects of EMF and refers to extensive peer-reviewed papers discussing these, as they relate to EHS in her opinion. While she is not offering opinions on these subjects, her extensive study of them will bolster her credibility and thus the credibility of the differential diagnosis for the trier of fact. It is for the reason of its extra detail and discussion of the underlying physiological effects that are found associated with EHS, that her opinion is not cumulative (as Fay contends, at Fay Memo., p. 35) even if her basic opinion, which is similar to that of Dr. Hubbuch's, might be so considered. However, this is not the time to sort out what will be cumulative at a trial and whether it objectionable on that basis, particularly in light of the expert pouring-on that Fay proposes with its experts. This resolution should likely await a pre-

trial conference or at a minimum wait until after Dr. Herbert's testimony is heard or summarized at the *Daubert* hearing.

Whenever this issue is considered, Fay's citation (Fay Memo, p. 35) to *Laplace-Bayard v. Batlle*, 295 F. 3d 157, 163-164 (1st Cir. 2002) will give little comfort to Fay. In *Laplace*, the second expert had been disallowed by the trial court because he was disclosed on the eve of trial in serious violation of the expert disclosure time requirements. The district court had also found that allowing such a last-minute expert would likely prejudice the other side and would be cumulative. On appeal, the First Circuit affirmed the exclusion based on the timeliness issue and stressed that it saw no unfairness in doing so, not only because of the timing rules warranted his exclusion, but also because it would have been cumulative. That is obviously not our case.

(3) Fay's Attack Does Not Preclude Dr. Herbert's Testimony

Dr. Herbert's opinion does not confuse correlation with causation with respect to G's increase in oxidative stress, as defendants argue. (Fay Memo, p. 31) Rather, Dr. Herbert appropriately considered G's increase in oxidative stress along with all the information provided and the test results obtained in order to make her final diagnosis. Thus, Dr. Herbert's opinion is not based *solely* on the fact that G experienced increased oxidative stress after long-term exposure to Fay's upgraded and pervasive Wi-Fi system, which would be an example of the *post hoc ergo propter hoc* error. Rather, Dr. Herbert considered this oxidative stress along with the evidence ruling out other possible causes of G's headaches, the consistency of all his symptoms with EHS, and the striking fact that his symptoms are experienced only at Fay which is the only time that he is exposed to such extensive Wi-Fi for a full day at a time. *See*, Def. Ex. 20, Dr. Herbert's Report, p. 2 discussing these facts and that Dr. Herbert herself performed a neurological examination of G, that other tests had been performed to rule out intracranial mass

lesions and infectious issues such as Lyme disease, and that G's home environment was checked for exposures to other elements such as mold that all may have been causing G's symptoms.

While Dr. Herbert notes that "[o]f interest and pertinence is his positive finding of oxidative stress" because such stress has been associated with Wi-Fi, she also acknowledges in her report that "[o]xidative stress is not specific to Wi-Fi." *Id.* Rather, she considers this fact along with the fact that G only experienced these symptoms at School and not elsewhere, and the other evidence cited, combined with her training and experience to make her diagnosis.

Moreover, Fay's argument on this point failed in the *Neurontin* case. In that case, defendant's argued that the plaintiff's experts (Dr. Maris) applied the logical fallacy of *post hoc ergo propter hoc* in reaching his conclusion that Neurontin caused plaintiff's husband's (Mr. Smith's) suicide:

Defendants also insist that Dr. Maris relies too heavily on the temporal relationship between Mr. Smith's alleged taking of Neurontin and his suicide. *In both the general and specific causation contexts, the temporal relationship (order of exposure and illness) is a factor which experts are encouraged—and required—to consider. See Reference Guide on Medical Testimony, supra, at 469.* Certainly, if an expert bases a causation opinion solely on the fact that a patient was exposed to an agent prior to his or her illness, the reliability of the opinion would be called into question. *See Ervin v. Johnson & Johnson, Inc.*, 492 F.3d 901, 904–05 (7th Cir.2007) (“The mere existence of a temporal relationship between taking a medication and the onset of symptoms does not show a sufficient causal relationship.”). However, that is not the case here. Dr. Maris appropriately addresses the temporality criteria, pointing to specific evidence that, after he began taking Neurontin, Mr. Smith exhibited “dramatic changes,” including a worsening of risk factors such as depression, and even became “suddenly suicidal.” (Maris Decl. ¶¶ 7, 7A; *see* Maris Rep. 17–20.) Dr. Maris does not, however, make these statements in a vacuum. Rather, as extensively detailed in this Court's prior evaluation of plaintiff's general causation testimony, there is scientific evidence that Neurontin puts some people at increased risk for depression and impulsive, aggressive, or suicidal behavior. *See In re Neurontin*, 612 F.Supp.2d at 152–53.

In re Neurontin, supra., 2009 WL 3756328, at *8-10 (D. Mass. Aug. 14, 2009) (emphasis added). As shown above, Dr. Herbert likewise does not make her statements of G's oxidative stress in a vacuum.

(G) Robert Bowdoin

Robert Bowdoin, a highly experienced and trained electrician (Def. Ex. 26, p. 1), will explain how he can easily reconfigure several of Fay classrooms and their adjacent hallways to allow internet access by Ethernet cable. Plaintiffs seek an order directing Fay to reconfigure several classrooms and their adjacent hallways so that the internet access in and around those rooms is gained by Ethernet cable. Ethernet cable avoids EMF emissions and delivers internet *more* proficiently. Mr. Bowdoin's testimony will show that a workable accommodation can easily be made to use Ethernet cable instead of Wi-Fi. Specifically, he summarizes his testimony as follows in his report (*Id.*, p. 1):

There are many ways to configure Ethernet cable so that many users in the same room can have access to it. The key to making this installation easy and inexpensive is if the room involved already has an Ethernet cable jack, or portal, installed somewhere within that room. If that is the case, then from that jack, by use of splitters, many individual Ethernet cables can be laid throughout the room.

I understand that at the Fay School, there are up to 15 students in each class. Having a separate cable for each student is not a problem given the presence of a jack in every room and the ability to use splitters.

Moreover, there are also many ways to set the individual Ethernet cables so that they do not just lay on the floor or hang down from the walls or ceilings such that they impair movement in the room, or visibility. They can be run through the ceiling and then dropped down by use of a central pole and spread from there to each desk, they can come up from the floors, even cement floors, or they can come through the walls. Under any of these options, they can be configured in such a way that they are available for use at each of the desks involved without disrupting the flow or the vision in the room.

This evidence is relevant to the injunctive relief sought.

Defendants have refused Plaintiffs' accommodation proposal, telling this Court that they have already attempted accommodations which they describe as follows:

. . . consisted of a number of adjustments to each of G's nine classrooms, including adding equipment in those classrooms to allow G to access the Internet via an Ethernet cord (instead of the School's wireless network), moving students around in those classrooms, and, in some cases moving entire classrooms of students – all in an effort to reduce G's exposure to Wi-Fi emissions.

(Fay Memo, p. 3) This sounds much better than it actually was. The "equipment" was an Ethernet cord that G used for his individual laptop while all other students remained on Wi-Fi. All the classrooms had previously-installed Ethernet capability that could have been used for the entire class to access the internet by Ethernet. Fay's touting its "moving students around" simply meant that G was moved away from the other students by 6 feet or so in the hopes that this distance and his Ethernet cable would end the problem. Fay rejected any further efforts when these failed.²⁰ Robert Bowdoin's testimony would aid the trier of fact to see whether the Wi-Fi free classrooms, just one or two, that Plaintiffs propose can be easily accomplished or whether it is the problem Fay professes.

(H)Dr. Karl Maret

Dr. Karl Maret (report at Def. Ex. 17) will testify about the reliability of a device with which he has worked extensively, known as the dosimeter, and which can accurately record, store, and print out graphs depicting the intensity of Wi-Fi emissions in any location in which it has taken measurements. Some of his graphs will help show the Wi-Fi intensity levels at Fay.

²⁰ It is emphasized that G's family agreed to pay for all the expenses associated with this despite the fact that such is not a requirement of the ADA. But it does relate to the reasonableness of the proposed accommodation since, if Fay does not have to pay for it, Fay cannot balk on financial grounds. That said, plaintiffs note that Fay, while touting its non-profit status, has a Head of School who receives salary and other benefits exceeding \$500,000.00 annually, the top five employees receive over \$1.8 million, and their assets at the end of the last fiscal year exceeded \$50 million. *See*, Fay's Form PC for July 1, 2014 through June 30, 2015. (Ex. 22) Fay offered one internet cable.

Fay concedes that this device accurately reads EMF levels. Their objection is only that the particular dosimeter device used by G to record the EMF levels during several weeks of Fay school days was not operated by Dr. Maret and thus he could not know how accurate the results were when they were downloaded by G's mother in Southborough and sent to him so that he could graph them in hard copy.

Fay's objection is thus more in the nature of an objection to evidence foundation rather than under *Daubert*. At trial, or earlier if this Court prefers, Plaintiffs will show through the testimony of G and his mother that (1) the dosimeter actually used was used correctly so that it stated accurately or understated the EMF levels, (2) the resulting EMF measurements were downloaded in a way that they were not altered (and Dr. Maret will also testify that the design of the device and its downloading application prevent alteration), and (3) the downloaded file was then sent to Dr. Maret. Dr. Maret will then testify that he printed out the downloads into hard copies.

Plaintiffs will offer those hardcopies to show certain EMF levels in the various classrooms on the dates on which the dosimeter had measured them. This testimony will have to meet the requirements of any chain of custody situation. Plaintiffs expect that they will be able to do so.

CONCLUSION

Defendants' motion *in limine* should be denied and the Plaintiffs' experts should be allowed to testify.

Dated: July 10, 2016

Respectfully submitted,

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I, John J.E. Markham, do hereby certify that on July 10, 2016, I served the foregoing document via electronic mail on opposing counsel:

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